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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,663	03/18/2004	Masuhiro Natsuhara	039.0035	2662

29453 7590 03/22/2007

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EXAMINER	
PAIK, SANG YEOP	
ART UNIT	**PAPER NUMBER**
3742	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/708,663	NATSUHARA ET AL.	
	Examiner	Art Unit	
	Sang Y. Paik	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 7-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/20/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5 and 7-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al (WO 02/084717) in view of Fure et al (US 6,753,507), Nozaki et al (US 5,264,681), and Chen (US 6,423,949).

Ito shows the ceramic susceptor claimed a laminate ceramic susceptor including concentric circular resistive-heating elements circuit formed therein to heat discrete heating zones. Ito further shows a lead circuit (58) circuit formed non planar with the heating element for supplying electric power to the resistive-heating element, the electrodes (63) connected to the lead circuit at roughly center of the ceramic susceptor, and a shaft joined to the backside of the susceptor (also see Figures 10 and 11). But, It does not show the heating-element circuit pattern having a pattern spacing of 0.1 mm or more, the lead circuit having a resistance smaller than the resistance of the heating element, the shaft having a thermal conductivity lower than the susceptor ceramic, and the front side of the susceptor having a planarity of 0.5 mm or less and a surface roughness of 5 um or less in Ra.

Fure shows a ceramic susceptor made of AlN, having a thickness of 2-8 mm for supporting and heating a semiconductor wafer and a heating element having a heating pattern spacing of 0.3 mm or more. Fure also shows the wafer retaining heating surface having the

flatness of 100 microns or lower which meets the claimed planarity range of .5 mm or less, and the surface roughness of .8 to 3.2 um. Furthermore, Fure shows that the ceramic substrate is further added with yttrium oxide as the sintering aid. In view of Fure, it would have been obvious to one of ordinary skill in the art to adapt Ito with the claimed pattern spacing, planarity and surface roughness to provide a uniform heat distribution along its surface.

Nozaki shows a ceramic heater with a heating element with lead circuit (18) connected to the heating portion. Nozaki teaches that the lead circuit is made with wider width such that the resistance in the lead circuit is reduced which in turn would reduce heating generated therein. Nozaki further shows that it is well known in the art that the ceramic heater is made with the ceramic substrate containing AlN with sintering aids such as yttrium oxide with 2 weight percent to provide for a thermally stable heater. In view of Nozaki, it would have been obvious to one of ordinary skill in the art to adapt Ito with the lead circuit having smaller resistance to reduce any heat that would be generated thereto, and further provide the ceramic susceptor made of AlN with sintering aids such as yttria to provide a thermal stable heater which can withstand a high heating temperature.

Chen shows a ceramic susceptor made of AlN, heating elements, and a support shaft made of AlN but with lower thermal conductivity than that of the susceptor. Chen also shows that the thickness of the susceptor is 1.728 cm which meets the claimed susceptor thickness of 5 mm or more. In view of Chen, it would have been obvious to one of ordinary skill in the art to adapt Ito with the support shaft having a lower thermal conductivity so that the heat generated by the heating elements is confined or contained with the susceptor and that the heat would not be lost through the support shaft by conduction.

With respect to claim 5, Ito, as modified by Fure, having substantially the same structure as that of the recited structure, would inherently posses the recited temperature uniformity.

Response to Arguments

3. Applicant's arguments filed 1/19/07 have been fully considered but they are not deemed persuasive in view of Fure's finding of the recited pattern spacing and the surface roughness.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y. Paik whose telephone number is 571-272-4783. The examiner can normally be reached on M-F (9:00-4:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sang Y Paik
Primary Examiner
Art Unit 3742

syp